



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE

United States Patent and Trademark Office

Address: COMMISSIONER FOR PATENTS

P.O. Box 1450

Alexandria, Virginia 22313-1450

www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/784,591	02/23/2004	Charles Black	YOR920010225US2	9561
47930 7590 12/28/2009 CONNOLLY BOVE LODGE & HUTZ LLP (FOR IBM YORKTOWN) P.O. BOX 2207 WILMINGTON, DE 19899-2207				
EXAMINER				
GOODWIN, DAVID J				
ART UNIT		PAPER NUMBER		
2818				
MAIL DATE		DELIVERY MODE		
12/28/2009		PAPER		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/784,591

**Applicant(s)**

BLACK ET AL.

**Examiner**

DAVID GOODWIN

**Art Unit**

2818

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 23 September 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 20, 24, 35, 37, 50, 51 and 53-55 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 20, 24, 35, 37, 50, 51 and 53-55 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1. Claim 53 is rejected under 35 U.S.C. 102(b) as being anticipated by Chivukula (US 6,066,581).
2. Regarding claim 53.
3. Chivukula teaches a dielectric layer. Said layer is lead zirconate titanate and has a dielectric constant greater than 10 (column 13 lines 15-25). Said layer comprises particles having a diameter between 10 and 15 nm and a uniform size (column 15 lines 1-10). Particles having a uniform size would have a standard deviation of 0%. As the surfactant is removed from the layer, said material does not form part of the layer.
4. Note that a “product by process” claim is directed to the product per se, no matter how actually made. See *In re Thorpe et al.*, 227 USPQ 964 (CAFC, 1985) and related case law cited therein which make it clear that it is the final product per se which must be determined in a “product by process” claim, and not the patentability of the process, and that, as here, an old or obvious product produced by a new method is not patentable as a product, whether claimed in “product by process” claims or not. As stated in *Thorpe*,

a. Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. *In re Brown*, 459 F.2d 531, 535, 173 USPQ 685, 688 (CCPA 1972); *In re Pilkington*, 411 F.2d 1345, 1348, 162 USPQ 145, 147, (CCPA 1969); *Buono v. Yankee Maid Dress Corp.*, 77 F.2d 274, 279, 26 USPQ 57, 61 (2d. Cir 1935).

Note that Applicant bears the burden of proof in such cases as the above case law makes clear.

1. Claims 20, 24, 35, 37, 50, 51, 53, 54, and 55 are rejected under 35 U.S.C. 103(a) as being unpatentable over Leung (US 2002/0137260) in view of Matijevic (US 5,900,223).
2. Regarding claim 37
3. Leung teaches a dielectric layer. Said dielectric layer consists of nanoparticles have a 2nm diameter and having a monodisperse size distribution, which is less than 5% standard deviation (paragraph 0021). The nanoparticles may be coated with a surfactant (paragraph 0021).
4. Leung does not teach the dielectric constant of the material.
5. Matijevic teaches barium titanate nanoparticles (column 12 lines 30-45). Barium titanate has a dielectric constant higher than 10.
6. It would have been obvious to one of ordinary skill in the art to use barium titanate nanoparticles in order to make advanced and superior products which have nanoparticles having good sinterability, dense packing, fine grained structure, and a high dielectric constant further the powders have great usefulness in many applications including dielectrics..

7. Note that a "product by process" claim is directed to the product per se, no matter how actually made. See *In re Thorpe et al.*, 227 USPQ 964 (CAFC, 1985) and related case law cited therein which make it clear that it is the final product per se which must be determined in a "product by process" claim, and not the patentability of the process, and that, as here, an old or obvious product produced by a new method is not patentable as a product, whether claimed in "product by process" claims or not. As stated in *Thorpe*,

- a. Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. *In re Brown*, 459 F.2d 531, 535, 173 USPQ 685, 688 (CCPA 1972); *In re Pilkington*. 411 F.2d 1345, 1348, 162 USPQ 145, 147, (CCPA 1969); *Buono v. Yankee Maid Dress Corp.*, 77 F.2d 274, 279, 26 USPQ 57, 61 (2d. Cir 1935).

Note that Applicant bears the burden of proof in such cases as the above case law makes clear.

8. Regarding claim 50.
9. Differences in percentages will not support the patentability of subject matter encompassed by the prior art unless there is evidence indicating such percentages are critical. "Where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the workable ranges by routine experimentation". *In re Aller*, 220 F.2d 454,456,105 USPQ 233, 235 (CCPA 1955).

Since the applicant has not established the criticality (see next paragraph) of the percentages, and this percentages has been used in similar devices in the art (see, e.g.,

Matijavic column 7 lines 40-50) it would have been obvious to one of ordinary skill in the art to use these values in the device.

#### CRITICALITY

The specification contains no disclosure of either the critical nature of the claimed thickness or any unexpected results arising therefrom. Where patentability is said to be based upon particular chosen dimensions or upon another variable recited in a claim, the applicant must show that the chosen dimensions are critical. *In re Woodruff*, 919 F.2d 1575, 1578, 16 USPQ2d 1934, 1936 (Fed. Cir. 1990).

10. Regarding claim 51.

11. Differences in percentages will not support the patentability of subject matter encompassed by the prior art unless there is evidence indicating such percentages are critical. "Where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the workable ranges by routine experimentation". *In re Aller*, 220 F.2d 454,456,105 USPQ 233, 235 (CCPA 1955).

Since the applicant has not established the criticality (see next paragraph) of the percentages, and this percentages has been used in similar devices in the art (see, e.g., Matijavic column 7 lines 40-50) it would have been obvious to one of ordinary skill in the art to use these values in the device.

#### CRITICALITY

The specification contains no disclosure of either the critical nature of the claimed thickness or any unexpected results arising therefrom. Where patentability is said to be based upon particular chosen dimensions or upon another variable recited in a claim, the applicant must show that the chosen dimensions are critical. *In re Woodruff*, 919 F.2d 1575, 1578, 16 USPQ2d 1934, 1936 (Fed. Cir. 1990).

12. Regarding claim 20.

13. Differences in percentages will not support the patentability of subject matter encompassed by the prior art unless there is evidence indicating such percentages are

critical. "Where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the workable ranges by routine experimentation". *In re Aller*, 220 F.2d 454,456,105 USPQ 233, 235 (CCPA 1955).

Since the applicant has not established the criticality (see next paragraph) of the percentages, and this percentages has been used in similar devices in the art (see, e.g., Matijavic column 7 lines 40-50) it would have been obvious to one of ordinary skill in the art to use these values in the device.

14. Regarding claim 35

15. Differences in percentages will not support the patentability of subject matter encompassed by the prior art unless there is evidence indicating such percentages are critical. "Where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the workable ranges by routine experimentation". *In re Aller*, 220 F.2d 454,456,105 USPQ 233, 235 (CCPA 1955).

Since the applicant has not established the criticality (see next paragraph) of the percentages, and this percentages has been used in similar devices in the art (see, e.g., Matijavic column 7 lines 40-50) it would have been obvious to one of ordinary skill in the art to use these values in the device.

#### CRITICALITY

16. The specification contains no disclosure of either the critical nature of the claimed thickness or any unexpected results arising therefrom. Where patentability is said to be based upon particular chosen dimensions or upon another variable recited in a claim,

the applicant must show that the chosen dimensions are critical. *In re Woodruff*, 919 F.2d 1575, 1578, 16 USPQ2d 1934, 1936 (Fed. Cir. 1990).

17. Regarding claim 53.

18. Leung teaches that the surfactant is not added (paragraph 0021).

19. Regarding claim 54.

1. In an embodiment where the functional groups are removed from the surface of the nanoparticle note that a "product by process" claim is directed to the product per se, no matter how actually made. See *In re Thorpe et al.*, 227 USPQ 964 (CAFC, 1985) and related case law cited therein which make it clear that it is the final product per se which must be determined in a "product by process" claim, and not the patentability of the process, and that, as here, an old or obvious product produced by a new method is not patentable as a product, whether claimed in "product by process" claims or not. As stated in *Thorpe*,

a. Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. *In re Brown*, 459 F.2d 531, 535, 173 USPQ 685, 688 (CCPA 1972); *In re Pilkington*. 411 F.2d 1345, 1348, 162 USPQ 145, 147, (CCPA 1969); *Buono v. Yankee Maid Dress Corp.*, 77 F.2d 274, 279, 26 USPQ 57, 61 (2d. Cir 1935).

20. Note that Applicant bears the burden of proof in such cases as the above case law makes clear.

21. Regarding claim 55.

22. Leung teaches that the solvent is removed (paragraph 0023).



2. Note that a "product by process" claim is directed to the product per se, no matter how actually made. See *In re Thorpe et al.*, 227 USPQ 964 (CAFC, 1985) and related case law cited therein which make it clear that it is the final product per se which must be determined in a "product by process" claim, and not the patentability of the process, and that, as here, an old or obvious product produced by a new method is not patentable as a product, whether claimed in "product by process" claims or not. As stated in *Thorpe*,

b. Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. *In re Brown*, 459 F.2d 531, 535, 173 USPQ 685, 688 (CCPA 1972); *In re Pilkington*. 411 F.2d 1345, 1348, 162 USPQ 145, 147, (CCPA 1969); *Buono v. Yankee Maid Dress Corp.*, 77 F.2d 274, 279, 26 USPQ 57, 61 (2d. Cir 1935).

Note that Applicant bears the burden of proof in such cases as the above case law makes clear.

23. Regarding claim 24

24. Matijev teaches that the particles are barium titanate.

25. It would have been obvious to one of ordinary skill in the art to use barium titanate nanoparticles in order to make advanced superior products which have nanoparticles having good sinterability, dense packing, fine grained structure, and a high dielectric constant.

26. Claim 54 is rejected under 35 U.S.C. 103(a) as being unpatentable over Leung (US 2002/0137260) in view of Matijev (US 5,900,223) as applied to claim 37 and further in view of Yokouchi (US 5,143,637).

27. Regarding claim 54
28. Leung in view of Matijev teaches elements of the claimed invention above.
29. Leung in view of Matijev does not teach the composition of the surfactant.
30. Yokouchi teaches a particle surfactant comprising a carboxyl group (column 5 lines 25-35).
31. It would have been obvious to one of ordinary skill in the art to coat the particles with carbyl groups in order to increase the dispersion of the particles.

***Response to Arguments***

32. Applicant's arguments filed 9/23/09 have been fully considered but they are not persuasive.
33. The applicant argues that structural limitations implied by the process are not taught by the prior art.
34. The applicant will note that it is the practice of the PTO to accord weight to the process steps of a product by process claims to the extent that those process steps differentiate the final product. The burden is on the applicant to demonstrate that the process steps distinguish the product. MPEP 2113. In re Thorpe.
35. The applicant argues that grains of the application patentably differ from those of the prior art.
36. The applicant's specification only teaches that the uniformity of the grains is the only property of the grains which differs from the prior art. However, as rejected above, uniform grain size is taught by the prior art (see Chivukula). As this property was specifically and explicitly rejected above the examiner did not fail to accord the property

weight and consideration. The burden is on the applicant to demonstrate, not merely allege, that the process steps distinguish, not conform, the product from the prior art. MPEP 2113. *In re Thorpe*.

37. The applicant argues that a combination requires a motivation to combine.

38. In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

39. In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, Matejevic teaches powders useful for making dielectrics that have superior dielectric properties, size uniformity, and sinterability.

40. The applicant argues that the Leung does not teach surfactant coated particles.

41. The applicant will note that Leung teaches surfactant coated particles (Leung paragraph 21) .
42. The applicant argues that one of ordinary skill in the art would not look to Yokouchi.
43. The applicant will note that Yokouchi regards the art of coating particles with surfactant and therefore is highly relevant to questions of coating particles with surfactant.

#### ***Conclusion***

44. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DAVID GOODWIN whose telephone number is (571)272-8451. The examiner can normally be reached on Monday through Friday, 9:00am through 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Loke can be reached on (571)272-1657. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

djg

/STEVEN LOKE/

Supervisory Patent Examiner, Art Unit 2818